

Islam and Modern Science

A Lecture by Seyyid Hossein Nasr

The following is a lecture by Seyyid Hossein Nasr entitled, ``Islam and Modern Science'', which was co-sponsored by the Pakistan Study Group, the MIT Muslim Students Association and other groups. Professor Nasr, currently University Professor of Islamic Studies at Georgetown University, is a physics and mathematics alumnus of MIT. He received a PhD in the philosophy of science, with emphasis on Islamic science, from Harvard University. From 1958 to 1979, he was a professor of history of science and philosophy at Tehran University and was also the Vice-Chancellor of the University over 1970-71. He has been a visiting professor at Harvard and Princeton Universities. He has delivered many famous lectures including the Gifford Lecture at Edinburgh University and the Iqbal Lecture at the Punjab University. He is the author of over twenty books including ``Science and Civilization in Islam'', ``Traditional Islam in the Modern World'', ``Knowledge and the Sacred'', and ``Man and Nature: the Spiritual Crisis of Modern Man''. The verbatim transcript of the lecture was edited to enhance clarity and remove redundancies. We have tried our best to preserve the spirit of what was said. Any errors are solely the responsibility of the Pakistan Study Group. * and ** indicates places where either a phrase or sentence was indecipherable. Words in [] were added to improve continuity.

Bismillah hir rahmanir rahim

First of all, let me begin by saying how happy I am to be able to accept an invitation of the MIT Islamic Students Association, and that of other universities and other organizations nearby, to give this lecture here today at my alma mater. I feel very much at home not only at this university, but being the first Muslim student ever to establish a Muslim students' association at Harvard in 1954, to see that these organizations are now growing, and are becoming culturally significant. I am sure they play a very important role in three ways. Most importantly, in turning the hearts of good Muslims towards God, *Allah ta'allah*. At a more human level to be able to afford the possibility for Muslims from various countries to have a discourse amongst themselves, and third to represent the views of Muslims on American campuses where there is so much need to understand what is going on at the other side of the world. That world which seems to remain forever the OTHER for the West, no matter what happens. The Otherness, somehow, is not overcome so easily.

Now today, I shall limit my discourse to Islam and its relation to modern science. This is a very touchy and extremely difficult subject to deal with. It is not a subject with any kind of, we might say, dangerous pitfalls or subterfuges under way because it is not a political subject. It does not arouse passions as, let's say, questions that are

being discussed in Madrid, or the great tragedy of Kashmir or other places. But nevertheless, it is of very great consequence because it will affect one way or the other, the future of the Islamic world as a whole.

Many people feel that that in fact there is no such thing as the Islamic problem of science. They say science is science, whatever it happens to be, and Islam has always encouraged knowledge, *al-ilm* in Arabic, and therefore we should encourage science and what's the problem? -there's no problem. But the problem is there because ever since children began to learn Lavoiser's Law that water is composed of oxygen and hydrogen, in many Islamic countries they came home that evening and stopped saying their prayers. There is no country in the Islamic World which has not been witness in one way or another, to the impact, in fact, of the study of Western Science upon the ideological system of its youth. Parallel with that however, because science is related first of all to prestige, and secondly, to power, and thirdly, without [science] the solution of certain problems within Islamic society [is difficult], from all kinds of political backgrounds and regimes, all the way from revolutionary regimes to monarchies, all [governments] the way from semi-democracies to totalitarian regimes, all spend their money in teaching their young Western science. I see many Muslims in the audience today, many of you, your education is paid for by your parents or your government or some university in order precisely to bring Western science back into the Muslim world. And therefore we are dealing with a subject which is quite central to the concerns of the Islamic world. In the last twenty years [this subject] has begun to attract some of the best minds in the Islamic world to the various dimensions of this problem.

And therefore I want to begin by first of all by expressing for you, (making things easier, categorizing it a bit), three main positions which exist in the Islamic world today as far as the relationship between Islam and modern science is concerned, before delving a bit more deeply into what my own view is. First of all, is the position that many people re-iterate. I am sure many of you in this room, and especially at a place like MIT, who would not have had much of a chance to study the philosophical implications of either your own tradition, that is Islam, nor of Western science, believe that one studies science and then one says prayers, loves God and obeys the laws of the *Shariah*, and that there is really no problem. This position itself is not something new. It is something that was inculcated in many circles of the Islamic world during the past century and going back historically, it was the position taken up by Jamaluddin Al-Afghani who migrated to Egypt and called himself Al-Afghani. The famous reformer, a rather maverick [figure], of the nineteenth century was at once a philosopher, political figure, Pan-Islamist and anti-Caliphate organizer *. Nobody knows exactly what his political positions were, but he was certainly a very influential person in the nineteenth century, and was responsible, directly, and indirectly, through his student Mohammed Abduh, for the so-called reforms that took place in the 1880's and 1890's of the Christian era, that is

the beginning of the fourteenth century of the Islamic era, in Egypt. Jamaluddin has been claimed, interestingly enough, by both modernists and anti-modernists forces like the *Ikhwan-ul-Muslimeen* in Egypt during the early decades of this century.

Jamaluddin was interested in Western science, [though] he had very little knowledge [of it], and he was also very much interested in the revival of the Islamic world. The character of [Jamaluddin's] argument is absolutely crucial to the understanding of what I am talking about. He came up with view that science per se is what has made the West powerful and great. And the West is dominating over the Islamic world because it has this power in its pocket. And since this is being allowed, this is being done, there must be something very positive about this science, that science itself is good, because it gives power. This was the first part of his argument. Secondly, [he argued], science came from the Islamic world originally and therefore Islamic science is really responsible for the West's possession of science and the West's domination of the Islamic world itself. And therefore, all the Muslims have to do is to reclaim this science for themselves in order to reach the glories of their past and become a powerful and great civilization. This is the gist of a rather extensive argument given by Jamaluddin Afghani which equates, in fact, Islamic science with Western science. Secondly, it equates the power of the West with the power of science. To some extent this is true, but not completely so. And thirdly, it believes that acquisition of this science of the West [by the Muslims] is, no more no less, than the Muslims claiming their own property which has somehow been taken over by another continent and [the Muslims] just want back what is really their own. Now this point of view had a great deal of impact upon the Islamic world, upon the modernist circles, and in order to understand what is going on in the Islamic world today it is important to see what consequences flow from this.

I am really addressing my lecture predominantly to Muslims students and scholars and scientists, discussing in a sense family problems. I am sure there are some Christians and non-Christian Western people present which is fine, which is a way to understand another civilization's struggle to look at the major problems that it has. But my lecture is really tailored to the internal problems of the Islamic world, as far as science is concerned. I hope other people will forgive me, this is not just a formal lecture on the history of science in last century in the Islamic world by any means. * I want to pursue what happened to Jamaluddin's thesis in the nineteenth century. The modernists in the Islamic world [are] one of three important groups that came into being in the nineteenth century. The other two being those who are now being dubbed as the fundamentalists, a term which I do not like at all but which is now very prevalent, and third, those who believe in some kind of Mahdiism, some kind of apocalyptic interference of God. These two groups I shall not be dealing with at the present moment. The most important group for us to consider are the modernists.

The modernists took on this thesis of Jamaluddin, and during the last century and a half, they have carried the banner of a kind of rationalism within the Islamic world which will accord well with the simple equation of science with Islamic science and with the Islamic idea of knowledge, *al-ilm*. [Interestingly,] as a consequence of this,

the Islamic world during this one hundred and fifty year period produced very few historians of science and very few philosophers of science. It produced a very large number of scientists and engineers, some of whom very brilliant and studying in the best institutions of the world like here, but it produced practically no major philosopher and historian of science until just a few decades ago. This problem [was just left aside] because it was uninteresting and irrelevant, and all the debate that was being carried out in the West itself about the impact of science upon religion, upon the philosophy of science, [about] what this kind of knowing meant, these were circumvented, more or less, in the Islamic educational system.

There were a few exceptions. Kamal Ataturk came into power in Turkey. Though in many ways a brutal [soldier, he] saved Turkey from extinction. We know what he did to Islam in Turkey. But he had a certain intuition, certain visions of things. The first thing that he did was to say that in order for Turkey to stand on its feet as a modern "secular" state, what it has to do is [to] learn about the history of Western science. So when the program for the doctorate degree in the history of science headed by the late George Sarton, scholar and historian of science, was established at Harvard University which was the first program in this country, Ataturk sent the first student to study the history of science anywhere in America, to Harvard. The first person to enter the PhD program in the history of science at Harvard University is a Turk, Aideen Saeeli. He is still alive, [and] is the doyen of the Turkish historians of science.

There were exceptions but by and large, the modernists forces within the Islamic world, decided to neglect and overlook the consequences of Western science, either philosophical or religious and felt that Islam could handle the matter much better than Christianity. [They felt] that there was something wrong with Christianity [as] it buckled under the pressures of modern science and rationalism in the nineteenth century, and this would not happen to Islam. Certain Western thinkers, in fact, followed this trend of thought. One of the most rabidly anti-Christian, [and] anti-religion philosophers of France in the nineteenth century, Ernst Renan, who was known as sort of the grandfather of rationalism in nineteenth century French philosophy, wrote a book which is now a classical book on Averroes, (Ibn-Rushd), [and] which has been reprinted now after 140 years in France, in which he says exactly the same kinds of things. He says that Averroes represents rationalism which led to modern science. [He] represents Arabic Islamic thought and Western theology, [which] simply did not understand this, has always been an impediment to the rise of modern science. So a kind of psychological and, loosely speaking, philosophical alliance was created between Islamic modernist thinkers and anti-religious philosophers in the West. This is something which needs a great deal of analysis later on. Let me just pass it over. It is not central to my subject, but we must take cognizance of it.

And this attitude continued, gradually proliferating from a few centers who sent [people to the] West to the modern education institutions of the Islamic world such as the Darul Fanooni in Iran, the University of Punjab in Punjab, the Foad I University in Cairo, Istanbul University and so forth and so on, and gradually embraced the whole body of the Islamic world. Today, every Thursday evening when you turn on Cairo radio there are one or two very famous lecturers who are, in fact, very devout Muslims, loved by the people of Egypt, [and] the heart of their message is every single verse of the Quran which deals with either *Ta'akul* or *Taffakur*, that is intellection or knowledge or observation or *mushahida*. These [verses] are interpreted ``scientifically'', that is, as an attempt to preserve Islam through scientific support for the Islamic revelation, for the Quran itself. And this is a very strong position in the Islamic world today. Therefore [the Muslim] thinks in fact there is no problem as far as Islam and modern science are concerned.

Now this position had a reverse. The *ulema*, religious scholars of the Islamic world opposed the modernist thesis, [which] was also based on the dilution of the *Sharia*, as you have seen in Turkey, the gradual introduction of Western political and economic institutions in the Islamic world, the rise of modern nationalism, all of these things which I will not go into right now. The religious scholars of Islam whose names paradoxically enough, meant scientists, in fact, disdained science completely. And so you have this dichotomy within the Islamic world, in which the modernists refuse to study the philosophical and religious implications of the introduction of Western science in the Islamic world, and the classical traditional *ulema*, and this cut across the Islamic world, all refused to have anything to do with modern science. There are again a few exceptions.

This left a major vacuum in the intellectual life of the Islamic community for which every single Muslim sitting in this room suffers in one way or another. Many people think this was all the fault of the *ulema*. I do not think this was all the fault of the *ulema*, this is also the fault of the authorities which had economic and political power in their hands, and the two in fact went together. We must add to this a third element [which] is that while science was spreading in the Islamic world, there had been created within the Islamic world, a reformist puritanical movement, especially within Arabia, associated with the name of Mohammed ibn Abdul Wahab, the so-called *Wahabi* movement, which is still very strong in Saudi Arabia, which in fact gave rise to [the country] with the wedding of Nejd and Hijaz in 1926-27. Its roots [lie] in the eighteenth century when this man lived, and his way of thinking then proliferated into Egypt and Syria.

[Similarly] the *Salafia* movement in India and other places, [also] wanted to interpret Islam in a very rational and simple manner and was opposed to "philosophical" speculation and was opposed to the whole tradition of Islamic philosophy. [These movements] all but went along with the more quarrelsome and troublesome dimensions of the impact of science upon the faith system and the philosophical world-view of Islam. It is interesting that the *Wahabi ulema* in the nineteenth century opposed completely any interest in modern science and technology. It is today that Saudi Arabia of course has one of the best programs for the teaching of science and technology in the Islamic world. The centers at Dhahran and other places are really quite amazing but it is a very modern transformation. In the nineteenth century, those very people stood opposed to the modernists, and the traditional Muslim *ulema* whether they were *Shafis* or *Malikis* or anything else, felt that as far as science was concerned, [opposition was justified].

This changed one-hundred and eighty degrees in our time. Today people of that kind of background, again want nothing to do with a discussion of the philosophical implications of science, but very much identify themselves with the Al-Afghani position, that science is *al-ilm* and let's get on with it, let's not bother with its implications. This is a [very important] position which I have traced for you rather extensively, because it is still very much alive in the Islamic world today.

The second position which is held within the Islamic world today, which is now held by a number of very interesting and eminent thinkers, is that, in fact, the problem of the confrontation of modern science with Islam is not at all an intellectual problem but rather an ethical problem. All the problems of modern science, all the way from making possible the dropping of atomic bombs on people's heads, to the creation of technologies which create the enslavement of those who receive them, the technological star wars of the last year in the Persian Gulf, all of these are not the fault of modern science, but [rather] of the wrong ethical application of modern science. And one must separate modern science from its ethical implications and usages in the West, take it and use it in another ethical system. As if one were to buy a Boeing 747 from California, then take it to Egypt and paint it Egypt Air, and it would become an Egyptian airplane. This is a view which exists and is rather prevalent in many places. Most of the new Islamic universities which have been established throughout the Islamic world, like the Islamic University in Malaysia, the Islamic University in Pakistan, the Umm-ul Quraa University in Makkah, try to emphasize this point of view. For example, in all Saudi universities, students are taught Islamic ethics with the hope that once they begin to learn science and engineering, they will take these and integrate them within this ethical system.

Now we come to the third point of view. This was discussed for a long time by practically no one, except yours truly. But in the last twenty years, it has gained a large number of followers. And that point of view is that science has its own world-

view. No science is created in a vacuum. Science arose under particular circumstances in the West with certain philosophical presumptions about the nature of reality. As soon as you say, m , f , v , and a , that is, the simple parameters of classical physics, you have chosen to look at reality from a certain point of view. There is no mass, there is no force out there like that chair or table. These are particularly abstract concepts which grew in the seventeenth century on the basis of a particular concept of space, matter and motion which Newton developed. The historians and philosophers of science in the last twenty [or] thirty years have shown beyond the scepter of doubt that modern science has its own world view. It is not at all value free; nor is it a purely objective science of reality irrespective of the subject you study. It is based upon the imposition of certain categories upon the study of nature, with a remarkable success in the study of certain things, and also a remarkable lack of success [in others], depending on what you are looking at.

Modern science is successful in telling you the weight and chemical structure of a red pine leaf, but it is totally irrelevant to what is the meaning of the turning of this leaf to red. The "how" has been explained in modern science, the "why" is not its concern. If you are a physics student and you ask the question, 'what is the force of gravitation?', the teacher will tell you the formula, but as to what is the nature of this force, he will tell you it is not a subject for physics. So [science] is very successful in certain fields, but leaves other aspects of reality aside.

In the 1950s, and I hate to be autobiographical but just for two minutes because it has to do with the subject at hand, when I was a student here at this University studying physics, the late Bertrand Russell, the famous British philosopher, gave a series of lectures at MIT. I never forget that when I went to that lecture, he said that modern science has nothing to do with the discovery of the nature of reality, and he gave certain reasons. And I came home, and I couldn't sleep all night. I thought that I had gone to MIT not because I was rich, or because the Iranian government forced me to go, [but] to learn the nature of reality. And here was one of the famous philosophers of the day [saying this was not to be]. This deviated me from the path of becoming a physicist, and I spent the next few years, parallel with all the other physics and mathematics courses I had to take, [studying] the philosophy of science both here, and at Harvard. It was that which really led me to study the philosophy of science and finally the Islamic philosophy of science and Islamic cosmology, to which I have devoted the last thirty years of my life.

This event turned me to try and discover what is the meaning of another way of looking at nature. And I coined the term, "Islamic Science", as a living and not only historical reality, in the fifties when my book * came out. I tried to deal with Islamic science not as a chapter in the history of Western science, but as an independent way

of looking at the work of nature. [This] lead to a great deal of opposition in the West. Had it not been for the noble support of Sir Hamilton Gibb, the famous British Islamicist [read Orientalist] at Harvard University, nobody would ever have allowed me to say such a thing. At that time, [it] was actually blasphemy to speak of Islamic science as an independent way of looking at reality and not simply as a chapter between Aristotle and somebody else in the thirteenth century. But now a lot of water has flown under the bridge. This third point of view, with its humble beginning in books which I wrote in my twenties, has won a lot of support in the Islamic World. And this perspective is based on the idea that Western science is as much related to Western civilization as any Islamic science is related to Islamic civilization. And as science is not a value free activity, it is fruitful and possible for one civilization to learn the science of another civilization but to do that it must be able to abstract and make its own. And the best example of that is exactly what Islam did with Greek science and what Europe did with Islamic science, which is usually called Arabic science but is really Islamic science, done by both Arabs and Persians, and also to some extent by Turks and Indians.

In both of these cases what did the Muslims do? The Muslims did not just take over Greek science and translate it into Arabic and preserve its Greek character. It was totally transformed into the part and parcel of the Islamic intellectual citadel. Any of you who have actually ever studied in depth the text of the great Muslim scientists like Alberuni or Ibn Sina or any Andulusian scientists know that you are living within the Islamic Universe. You're not living within the Greek Universe. It is true that the particular descriptions might have been taken from the [works] of Aristotle or a particular formula from Euclid's Elements, but the whole science is totally integrated into the Islamic point of view. The greatest work of Algebra in the pre-modern period is by the Persian poet Omar Khayyam. When we read his book, of course, if when you get [to a] particular formula or equation you could be writing in Chinese or English and could be in any civilization, but the impact that the whole work makes upon you makes you feel that you belong to a total intellectual universe—the Islamic Universe. And this is precisely what the West did to Islamic science. When in Toledo in the 1030's and the 1040's the translations of the books from the Arabic into Latin began which really began the scientific changes of the 12th century and again in the 15th, 16th and 17th centuries of the West, books were simply being translated from the Arabic into the Latin. The first few decades were very much like what the Islamic world was, or has been, in the last few decades. That is, actual works of, say, Ibn Sina were being read in medicine as if they were in Arabic, but since no one knew Arabic, they were in Latin. They may not have been very good translations but there they were. It only took a century, not longer than that, for the West to make this learning their own. And I always say to Muslims in giving lectures all over the Islamic World, to people in ministries of education, to people who are responsible, that the reason we cannot do this in the Islamic world is that symbolically, and the symbol is important, when the West adopted Islamic science, it even adopted the gown of the Muslim *Ulema*, * but it never took the turban and put it on its head. The head-dress of the European bishops of the middle ages, * was kept

on. Whereas at many Islamic universities today, we have taken both the gown and the cap from the West. We cannot think of ourselves independently. The whole thing has been taken over and has now been made our own. This I am giving as a kind of anecdotal reference but it is symbolic really of the type of processes that are going on.

There are two very good cases: One of Greek science taken over by Muslims, [and the other] of Islamic science taken over by the Latin West and later on the European West. In both cases there was a period of transmission but there was also a period of digestion, ingestion, and integration which always means also rejection. No science has ever been integrated into any civilization without some of it also being rejected. It's like the body. If we only ate and the body did not reject anything we would die in a few days. Some of the food has to be absorbed, some of the food has to be rejected. You might say what about the case of Japan which is so successful in making Mitsubishi, modern washing machines and so forth, but we haven't seen the end of the story. Will Zen, Buddhist [and] Shinto Japan be the same centuries from now and at the same time the science totally Western Science [translated into] Japanese or will [Japan] gradually transform the science and technology into something Japanese? We do not know yet.

But the historical cases that we do know- all point to a period of translation, and then digestion and integration and by virtue of integration, the expulsion of something which cannot be accepted, which is not in accord with that particular world view, which is exactly what the Latin West did. The Latin West was not interested in certain aspects of Islamic science which never took hold, which never became central. And some Muslims were not interested in some types of Greek Science which never took hold in Islamic soil. This is also a case which can be proven historically.

Now, all these views which are expressed for you today are not given force in the Islamic world. There are people all the way from Abdus Salam, the only Muslim to have won the Nobel Prize in physics, who was asked 'what happened to Islamic Science?' He said 'Nothing. Instead what we cultivated in Isfahan and Cordoba is now being cultivated in MIT, Caltech and at Imperial College, London. It's just a geographical translation of place'. All the way from that position, which is really an echo of what Jamaluddin Afghani [presented in a] new garb by a great physicist, over to the views [of] the so-called "ajmalis" in England who emphasize [the] ethical dimension of Islamic science and who at least realize that modern science is not value-free [and finally], to the position which is held by yours truly and many others in the Islamic world, and which has now given rise to the only institution, Aligarh University in India, which is trying to deal with this subject in a living fashion - I'll get to that in a moment. As I talk of these three ways of thinking about the relationship between Islam and modern science there are several important

phenomena that are going on in the Islamic world which I must describe for you before analyzing them.

First and most powerful, is the continuous flow and absorption of western science and technology into all existing Islamic countries to the extent that [they] can absorb it. ** In every single Islamic country, whatever political regime, whatever economic policy, whatever attitude towards the west [they may espouse], whether they are completely pro-western or have demonstrations in the street against the west, the adoption of western science and technology goes on. Which is a very telling fact for the whole of the Islamic world.

There are some places where some thought is being given to what is the consequence of this. Now there are many questions to ask here. First of all is this [transfer of science and technology] going on successfully? is it not going on successfully? If it is not successful, what is it not going on successfully? And if it is, why? This is a very major issue. The whole question of the transfer of science [is] not really a subject for me to deal with today.

The second phenomenon that is going on [today] is the [gradual] attempt being made to study both the meaning and the history of Islamic science. I think that in this field that Muslims should really be ashamed of themselves to put it mildly. Let me give you some examples. There are now today a billion Muslims in the world. Probably in the first to the second century of the history of Islam, that is the eighth Christian century, no one knows exactly, but there were something like 20-30 million Muslims. Despite that vast [Islamic] empire the numbers were somewhere around there [according to] the demographers. It may be wrong, but [it was] anyway a much smaller number [than the population of Muslims today].

During that 100 year period, more books in quantity, not to speak about the remarkable quality, were translated [about] the basic philosophical and scientific thought of Greek science than has been translated during a comparable 100 year period by all Muslims put together in all Islamic countries. This is really unbelievable. Not to talk about the quality, which is of a very high nature, in the early translations from Greek which made Arabic the most important scientific language in world for 700 years, [whereas today, we have] usually very poor quality translations into modern Islamic languages, oftentimes based on Latin knowledge of classical Arabic.

** Most the history of Islamic science has been written by western scholars including the great *. His one book, Introduction to the History of Science, has lead to at least 500 or 600 books in Urdu, Persian, Malay, Arabic and other Muslim languages which are sold in the streets as Islamic Science because everybody is too lazy to go do his own or her own research. [Typically in such works] one or two pages are just taken and culled and regurgitated and repeated and so forth and so on in a manner that is really sickening. Compared to the other civilizations of Asia, the Chinese and the Japanese and the Indian, the Muslims have not had a very good record in studying their own history of science despite the fact that this field was of great importance religiously, going back to what I said about Jamaluddin and Mohammed Abdur in the later 19th century, the rise of modernism in the Islamic world, and all of these other very powerful forces.

During the last 20-30 years, there has been a change. Gradually Muslim governments are realizing that it's very important that if you have 100 students that you have 80 of them study science and technology but it's also very important that the other twenty study the humanities and to train some people in the history of science, [which] although allied to science, is not really science itself. It is historical knowledge, it is linguistic knowledge, [and] it is philosophical knowledge. The Muslims have not yet developed their own historiography of science. This is a very important field. If you look at all the histories of science written in the west, everything ends miraculously in the thirteenth century- [implying] the whole of Islamic civilization came to an end in the thirteenth century. Islamic philosophy, Islamic science, history of astronomy, history of physics, alchemy, biology, anything you study, miraculously comes to an end in the thirteenth century which coincides exactly with the termination of political contact between Islam and the West. Now Muslims always get angry at why this is so, but Western historians are completely right to study Islamic history from their own point of view. And Muslim thinkers are completely wrong in studying their own history from the point of view of western history.

I said once many, many years ago in a statement in Pakistan 30 years ago, which has been repeated not many times, that any individual that stands in a mirror and looks at his or her own image perceives that image from the point of view of the model or the * behind the mirror * but we're doing this culturally, much of the Islamic world is doing this culturally and that is nothing less than an insane way of looking at themselves. We should be able to look at ourselves directly and to do that we have to develop a historiography of science.

I think for nine-tenths of the students in this room who are probably the most brilliant young students in the field of science - I'm now addressing the Muslim students - if I were to ask you `what do you know about the history of Islamic medicine in

the 17th Christian century' you'd probably say nothing. Well, that is a very brilliant period in the history of Islamic medicine and the reason you don't know anything about it is because E.G. Brown didn't write about it in his book "Arabian Medicine". That's the only reason. Because [Brown] was [only] interested in Early Islamic medicine [as it] influenced the great physicians in the west.

Now, therefore this [question of] the historiography of Islamic science is far from being a trivial question. And it has created, in fact, a vacuum within which the integration of western science and technology is made doubly difficult in the Islamic world. That is most young Muslim students have this view which has unfortunately been abetted by Arab Nationalism. I have to be very honest here, the nationalisms in the Middle East, Arabic, Persian, Turkish, are now more or less [over], they are ending one way or the other. That is they're showing their bankruptcy, not completely, there are nations that still exist of course but their grand days are perhaps over.

Arab Nationalism began with a thesis, propagated by small non-Muslim minorities within the Arab world, that the Islamic civilization began to go down when the Arab hegemony over Islamic civilization came to an end. That is with the Abbasids. If you look, for example, at the history of Arabic literature, everybody talks about the Umayyad and the Abbasid period and there is nothing going on for several hundred years until some poet begins to talk about the lamentations of the war in Iraq or the * tragedies in Palestine. That is, of course, very gripping poetry, but what were the Arabs doing for 700 years in between? That is totally overlooked. There must be some Yemenese students here. Where is there a single book on the history of Arabic poetry in Yemen- one of the richest lands in the Islamic world of poetry. We don't know that there might be some local book published in Sanaa but certainly in Cambridge we know nothing about it. So Arab nationalism had a lot to do with this * of trying to diminish the contribution that Islamic civilization. after the Mongol invasion and the destruction of Baghdad in 1258, which coincided with the downfall of the political hegemony of the Arabs who did not regain the political hegemony, even over themselves, until the 20th century.

Now, the consequence of that is, first of all, the overlooking of 700 years, not 70 years, 700 years, of Islamic intellectual history during which the Muslims were supposed to have done nothing. They were supposed to have been decadent for 700 years. Now how can you revive a patient that has been dead for that long a time? The idea [which] is propagated in the West [is] that Muslims are very brilliant, that they did science and things like that, [and then] suddenly decided to turn the switch off and went to selling beads and playing with their rosaries in the bazaar for the next 700 years till Mossadegh nationalized the oil and they came back on the scene of

human history are now living happily again. This, of course, is total nonsense and it brings about a sclerosis, intellectually, which is far from being trivial. ** Over [the] twenty years I have taught at Tehran University, I always felt, [our students] could never overcome this very long historical loss of memory. Somehow it was very difficult for them. They wanted to connect themselves to Al-Biruni and Khawarizmi and people like that, but this hiatus was simply too long. This hiatus has not been created by history itself. It has been created by the study of history from the particular perspective of Western scholarship, which is as I said, perfectly [within] its right in its claim that Islam is interesting only till the moment that it influences the West. The great mistake is when that objective divides the history of Islam [into a period of productivity and one of degeneration]. In the field of history of science, that is a very important element.

This leads me to the third important activity which is now going on in the Islamic World. [We have] studied Islamic science from our own point of view somewhat [though this study is hardly comprehensive for] it will take a long, long time to get all the [relevant] manuscripts. There are over three thousand manuscripts of medicine in India which have never been studied by anybody. This is [only] the tip of the iceberg. There are thousands of manuscripts in Yemen which we don't even know about. There is a new institution being established in London which is being inaugurated at the end of next month, the Al-Furqan Foundation, which will be devoted to assembling Islamic manuscripts from all over the world. and [compiling] original surveys of where the manuscripts are... places like Ethiopia for example, have treasures of Islamic manuscripts, many of them in the sciences. The process will take a long time, but at least on the basis of what has been begun, [progress can be made].

But in this field, there is now the third step of trying to further science within the Islamic world under the foundation of an Islamic logic of science. Now this is a very difficult and very tall order. It is not going something which is going to be done immediately, but I want to say a few words about what is being done and where. And we can perhaps discuss this with you during the question-answer period. It is interesting that some of the places where a great deal of the intellectual attention is being paid to the subject are not places which have been known historically as the great intellectual centers of Islamic civilization [which] have really always been between Lahore and Tripoli. About nine-tenths of all famous Islamic thinkers have come from that region, Spain being the one great exception. But today, one of the places, for example, where a great deal of the work is being done is Malaysia. Normally one would think of [Malaysia] as a small Islamic country with only a 55% or a 57% Muslim majority. [However] there is, because of the interest of the government, a great deal of effort being spent in trying to understand what is the meaning of Islamic science and how can science be further [explored for] the basis of an Islamic view towards science. Another place is Turkey. One does not usually

think of Turkey these days as being significant as a center of Islamic thought because of the secularism brought by Kamal Ataturk. ** But within Turkey, despite all of this, an incredible amount of intellectual activity [has been] going on in the last few decades bringing things as different, as separate, as the Naqshbandia of Istanbul and the Khizisists of Istanbul University together. The most important journal which is being published in Turkey on this issue, called "Science and Technology" is not, in fact, published by secular Turks. It is published by very devout Muslims, who are extremely interested in the Islamicity of Islamic science, and I think the Turkish will be able to make some major intellectual contributions in the future to this field.

Perhaps most interesting of all these programs is going on in Aligarh University in India. Aligarh University is of course a major Islamic university whose Islamicity is now very much threatened, by all that is going on in India, [one of] the great tragedies of the last few decades. ** I was in India, exactly a year ago tomorrow, and I was to give the Best Science awards in Aligarh University. People had come from all over India * but I could not go to Aligarh because it was too dangerous, because the government could not guarantee my safety. Everyday, about seven or eight people were killed just on the road. People pull you off of the car and shoot you, and you cannot do anything about it. So I could not go to Aligarh and I feel very sad about that. But I know exactly what is going on in Aligarh University. There is a new association called the "Muslim Association for the Advancement of Science" which now also publishes a journal called the "MAAS Journal". [MAAS] is a unique institution founded by twenty or thirty scientists, almost all of them, scientists, physicists, chemists, biologists, and some of them very brilliant, who want to absorb, first, Islamic science, then to absorb Western science. There is no way of establishing an Islamic science without knowing Western science well. To talk of circumventing what the West has learnt is absurd. But then the next step that has to be taken on the basis of Islamic world view and the view of nature. Whether they will succeed or not, *Allah o Aalim*, 'God knows best', but I mention it here as one of the most important attempts that is now being made in the Muslim world. Gradually a network is being created among young Muslim scientists who are concerned with religion and are also quite capable of dealing with the humanities. * I think a great deal of positive result will come from this, if the political situation does not get so bad as to destroy the very physical basis for these activities.

Let me conclude with a word about the future. Of course a person should never be too charmed by futurologists, otherwise you would never say *insha 'llah*. * Three years ago probably companies [were paying] fortunes to [be told] what the future of the Soviet Union was and [yet] nobody guessed what was going to happen. So, let's take this with a grain of salt. Only God knows. But from the point of a humble scholar of the situation, I believe that the cultural crisis created by the successful introduction of Western science and technology, successful enough to bring about rapid cultural patterns of change, is going to continue to pose major problems for the Islamic world. The best example of that is what happened in Iran.

Iran had without doubt, the most advanced program for the teaching of science and technology and the largest per capita number of scientists. It was the only country in the Muslim world where alternative technology was already beginning to be discussed, but the cultural transformation brought about by the very success of the enterprise, besides all the other political problems that were involved * certainly contributed to the outcome of what happened in the late seventies. The government in Iran today, wants [very much] to go back to implement the very scientific programs and technological programs which were put aside during the ten years after the revolution. But I believe that the impact of the absorption of Western science and more than that, the application of technology, for science today, in the minds of Muslim governments is not separated from application of technology, they are not simply interested in pure science. Pure scientists have a lot of trouble finding money for their work; it is the applied aspect which is emphasized. I think this [cultural dislocation] is going to, without doubt, continue until something serious is done.

I remember in 1983 when the Saudi government decided to found a science museum center in Riyadh, they contacted me and I went several times to Saudi Arabia and spoke to all of the leading people involved. I told them at that time, that a science museum could be a time bomb. Do not think that a science museum is simply neutral in its cultural impact. It has a tremendous impact upon those who go into it. If you go into a building in which one room is full of dinosaurs, the next room is full of wires, and the third full of old trains, you are going to have a segmented view of knowledge which is going to have a deep effect upon the young person who goes there, who has been taught about *Tawhid*, about Unity, about the Unity of knowledge, about the Unity of God, the Unity of the universe. There is going to be a dichotomy created in him. You must be able to integrate knowledge. ** I mention this to you as an example.

The problem [is] that with the increase of success of both the teaching of science and the technology, will bring with it a cultural dislocation [and] philosophical questioning which have to be answered especially at a time when the Islamic world does not want to play the role of a dead duck. There is not a moment in the history of Islam, when the Muslims like the other great civilizations of Asia are trying to play the game of the West. The Islamic world wants to pull its own weight, wants to find its own identity, and therefore this problem is going to be acute.

Secondly, I believe that [a] very major crisis [is being] set afoot by the very application of modern technology, that is the environmental crisis. [This crisis is] of course global. You cannot say, 'I am drawing a boundary around my country, I do not want the hole in the ozone zone, [to make] the sun shine upon my head'. You have no choice in that. Because of that, and because of the fact that Islamic countries, like Buddhist countries, like Hindu countries, will always eat from the bread crumbs of Western technology in the situation of the world today, more of an attempt is

made towards the direction of alternative technologies. [This] began in Iran in the seventies, and thank God, is still going on a little, and [in] other places [like] Egypt where a little [attempt] to spend some of the energy of society towards alternative technology [is being made]. [All of] which also means to try to look upon science as the mother of technology in somewhat of a different way.

And finally, I think, the intellectual effort is now being made. What is called by some people, the Islamisation of knowledge and which is now very popular, [and] which goes back to some of my own humble writings in the fifties, and later on, the treatise written by the late Ismail Al-Faruqui who was assassinated in Philadelphia two years back. This little treatise he wrote called, "The Islamisation of Knowledge", is now being discussed in educational conferences throughout the Islamic World, [which] is finally going to bear some fruit. Although it will require much more concerted effort of the most intelligent and gifted members of the Islamic community, who must know Western science in depth, who must know Islamic thought in depth, the cosmological message of the Quran, not only its ethical message, and at the same time have the energy to pursue this through. The task is a very daunting and difficult one. The problem of the partition of science from Islam is a problem that exists unless Islam is willing to give up its claim to being a total way of life. [If that were so], we must suppress not only what we do on Friday noons, * but what we do and think every moment of our daily lives. It is going to preserve an integrated principle that of course * must also be taken into consideration.

Thank you